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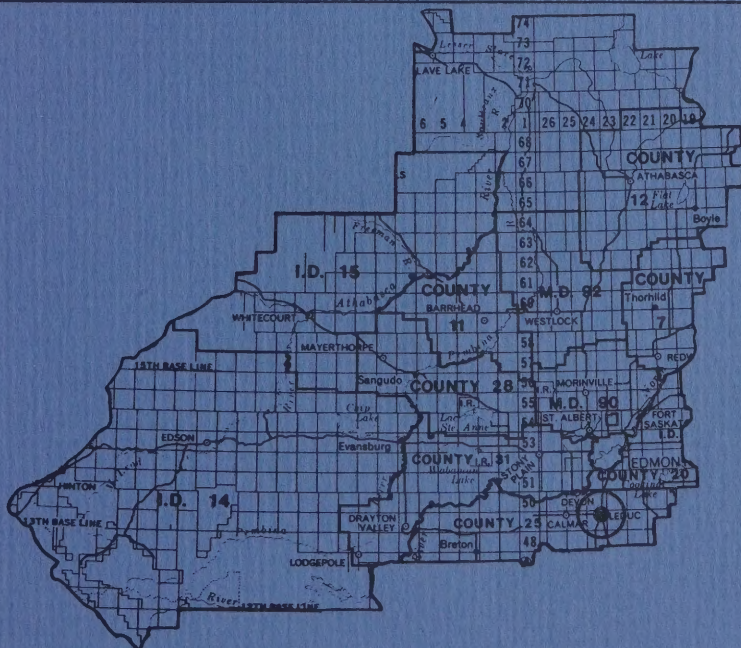
COSTS AND RETURNS

GRAIN SILAGE

50 ACRES

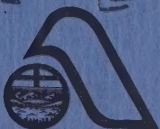
320 ACRE FARM

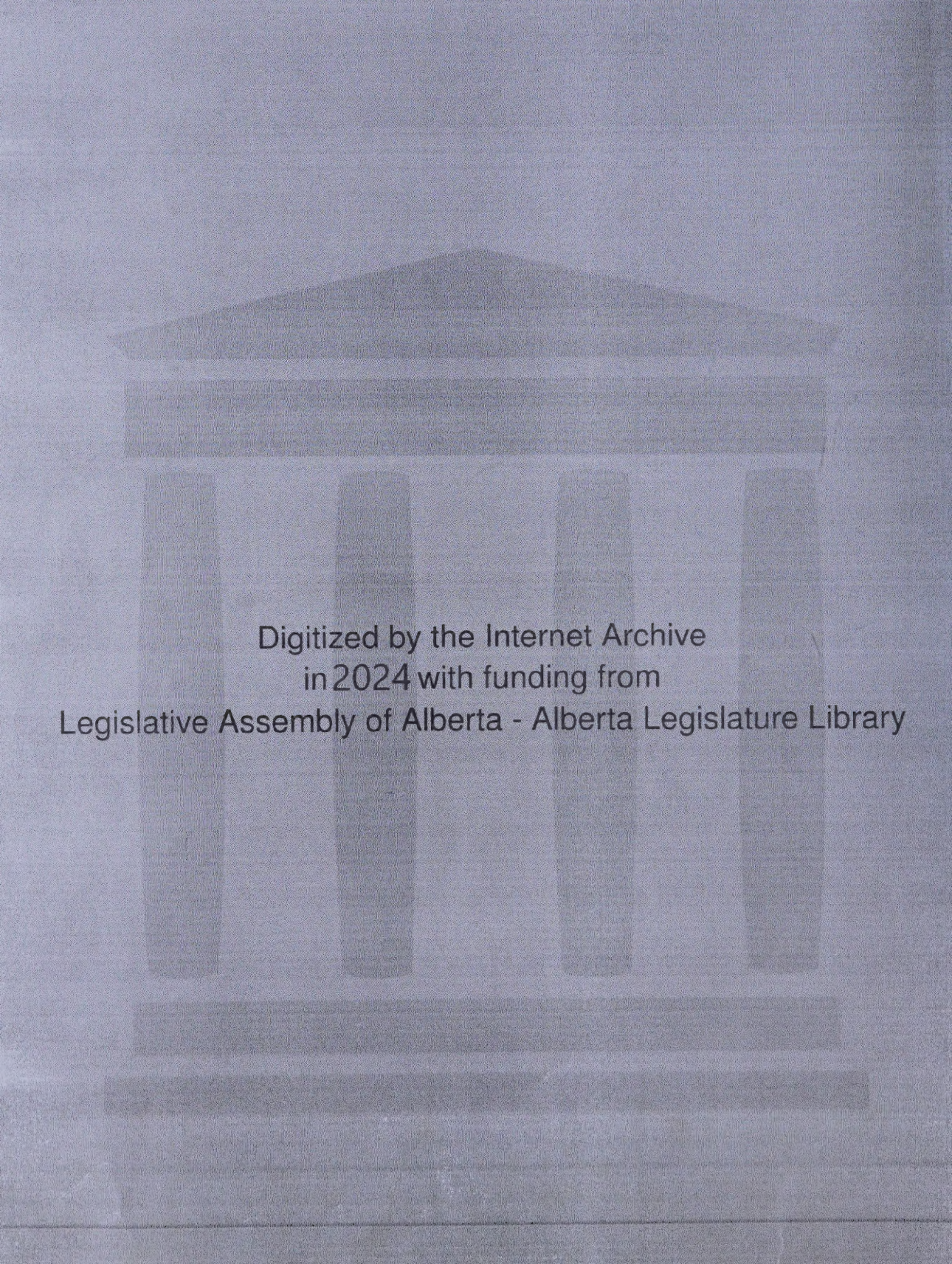
STRATHCONA - LEDUC COUNTIES



NORTH WEST ALBERTA

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A CONSENSUS OF COSTS & RETURNS
FOR
GRAIN SILAGE PRODUCTION

50 Acres of Silage
Strathcona & Leduc Counties

By
Richard S. Andersen
Regional Farm Economist

The author wishes to acknowledge the assistance of the farmers from Strathcona and Leduc Counties who provided the basic data, Don Christensen and Don Young, D. A.'s of the respective counties who helped gather the data and assisted in the preparation of this report.

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INTRODUCTION

Today's farming demands that cost and return information be available for all alternatives which the producer could consider when planning future production. Narrowing profit margins have forced the farmer to keep a close eye on all production costs and expected returns. This report provides an estimate of the costs and returns of producing grain silage based on the consensus of a group of farmers in the Edmonton and Leduc districts.

OBJECTIVES

This report was prepared to provide an estimate of costs of production and the expected returns from a 50 acre oats/barley silage system. Such information can be an important guide in decision-making, but the reader should keep in mind that costs vary between producers because of differences in land and cultural practices. The farmer's own records are essential to determine what it actually costs to produce a crop on his particular farm.

This report can be useful for management decisions:

1. In selecting the enterprise or crop rotation yielding the highest returns.
2. In determining the amount of cash required to operate during a season.
3. In determining the amount of time expected to be spent on an enterprise.

4. For projecting the expense and income when considering new investments requiring credit.
5. In determining how the expenses & receipts should be shared in rental arrangements.
6. To compare to actual costs incurred in your farming enterprises.

SOURCE & METHOD OF DATA COLLECTION

Following the expression of local interest, a number of producers were contacted and asked to attend a one-day workshop at which they could contribute information which they felt typically represented their production methods. The C. R. D. (Consensus Research Data) approach relies on this group participation to arrive at a consensus of opinion on production techniques, investment levels and costs. The data collected represents typical or most representative costs and returns rather than averages.

Staff from the Alberta Department of Agriculture are present at the workshops to guide the discussion and assist in the collection of data. After the raw data is assembled at this meeting, further calculations and documentation are carried out. Each producer who participates at the workshop has the opportunity of reviewing the material prior to publication.

ASSUMPTIONS SPECIFIC TO THIS STUDY

- (1) The farm consisted of 320 acres in the following rotation:

Silage	50
Grain	200
Forage	50
Native Pasture	20

- (2) Annual use of machines was based on the above cropping pattern.
- (3) Yield per acre was based on averages expected by the producers with the inputs and operations described in the cost operations:

<u>Crop</u>	<u>Yield</u>	<u>Value</u>
Grain Silage	8 Tons (wet basis)	\$7.00/ton

- (4) Seeding rate and estimated cost was:

<u>Crop</u>	<u>Rate</u>	<u>Price</u>	<u>Cost</u>
Barley	3/4 bu./acre	\$1.35/Bu.	\$1.01/acre
Oats	1 1/4 bu./acre	\$0.90/Bu.	\$1.13/acre

- (5) Fertilizer rate and cost:

<u>Type</u>	<u>Rate</u>	<u>Price</u>	<u>Cost</u>
33-0-0	50lbs/acre	\$.03/lb.	\$1.63/acre
26-13-0	60lbs/acre	\$.0375/lb.	\$2.25/acre

- (6) Weed Control costs:

<u>Type</u>	<u>Rate</u>	<u>Price</u>	<u>Cost</u>
MCPA	7oz/acre	\$0.07/oz	\$0.50/acre

- (7) Value of land: \$150/acre and taxes \$2.00/acre.
- (8) Interest rates: Machinery 7 1/2%; Real Estate 7%.
- (9) Labor: \$2.00/hour - all labor including owner's and hired.
- (10) Hauling costs based on total miles required to haul silage from field to silo.
- (11) Tractor and machine operating costs are based on information provided by the Alberta Department of Agriculture.
- (12) Storage structure used was a 20' X 60' wood stave silo.
- (13) Storage costs do not reflect costs for visible and invisible silage losses in the silo.
- (14) The cash and operator labor costs for harvest were adjusted linearly for yield variations above and below the reported **8 tons** per acre as reported in Table 2 and Table B. For example, the costs for 8 tons per acre were calculated as follows:

$$(5.6/8) \times \$3.86(\text{Cash Harvest}) = \$2.70$$

TABLE 1

Summary of Consensus Report

Costs and Returns at 8T/Acre Yield

	<u>Per Acre</u>	<u>Per Ton</u>
Cash Cultural Costs	8.10	1.02
Cash Harvest Costs at 8T/Acre	3.86	.48
Cash Overhead Costs	4.27	.53
Total Cash Costs	<u>16.23</u>	<u>2.03</u>
Non-Cash Overhead	70.54	8.82
Operator's Labor at 8T/Acre	2.79	.35
Total Non-Cash Costs	<u>73.33</u>	<u>9.17</u>
Expected Returns (8 Tons @ \$7.00)	<u>56.00</u>	<u>7.00</u>
Gross Cash Margin	<u>39.77</u>	<u>4.97</u>
Return to Risk and Management	- <u>33.56</u>	- <u>4.20</u>
Return to Operator's Labor, Risk and Management	- <u>30.77</u>	- <u>3.85</u>
Return to Land, Operator's Labor, Risk & Management	- <u>20.27</u>	- <u>2.53</u>

TABLE 2

Gross Returns and Costs Per Acre

at Various Yields and Prices

Crop Area	Grain Silage Strathcona/ Leduc	Yield Ton Per Acre						
		-30%	-20%	-10%	Average	+10%	+20%	+30%
		5.6	6.4	7.2	8.0	8.8	9.6	10.4
RETURNS PER ACRE	Price per Ton							
	6.00	33.60	38.48	43.20	48.00	52.80	57.60	62.40
	6.50	36.40	41.60	46.80	52.00	57.20	62.40	67.60
	7.00	39.20	44.80	50.40	56.00	61.60	67.20	72.80
	7.50	42.00	48.00	54.00	60.00	66.00	72.00	78.00
	8.00	44.80	51.20	57.60	64.00	70.40	76.80	83.20
	8.50	47.60	54.40	61.20	68.00	74.80	81.60	88.40
	9.00	50.40	57.60	64.80	72.00	79.20	86.40	93.60
	9.50	53.20	60.80	68.40	76.00	83.60	91.20	98.80
COSTS PER ACRE	Cash Cultural Costs	8.10	8.10	8.10	8.10	8.10	8.10	8.10
	Cash Harvest Costs	2.70	3.09	3.47	3.86	4.25	4.63	5.02
	Cash Overhead Costs	4.27	4.27	4.27	4.27	4.27	4.27	4.27
	Total Cash Costs	15.07	15.46	15.84	16.23	16.62	17.00	17.39
	Non-Cash Overhead	70.54	70.54	70.54	70.54	70.54	70.54	70.54
	Operator's Labor	2.42	2.54	2.67	2.79	2.91	3.04	3.16
	Total Costs	88.03	88.54	89.05	89.56	90.07	90.58	91.09



Date November 18, 1971

CROPS & FORAGE

Don Christensen
Don Young

County

Grain Silage
(Crop)

50

(Acres)

CASH CULTURAL COSTSHarvest 1 cuttingsCASH HARVEST COSTS

Cash Overhead

CASH OVERHEAD COSTS

EXPECTED CASH RETURNS PER ACRE

RETURNS/ACRE		
Crop	Yield	Value
Silage	8 Ton	@ \$7.00
		@ \$

GROSS CASH MARGIN

PRODUCTION COSTS
CROPS & FORAGE

821-A

(10)

				Total Cost Per Acre \$
TOTAL CASH COSTS PER ACRE (821-A, page 1), columns 5 + 6 + 10				\$16.23
AV. INVESTMENT PER ACRE TO STUDY CROP		FIXED COST PER ACRE		
Item	Per Acre	Depreciation	Interest	
Land	\$ 150.00	\$ --	\$ 10.50	10.50
Crop Supplies	33.00	.54	.26	.80
Buildings	88.00	7.20	6.16	13.36
Equipment	212.36	29.95	15.93	45.88
Total				
NON-CASH OVERHEAD				70.54
OPERATOR'S LABOR				2.79
TOTAL NON-CASH COSTS PER ACRE				73.33
(A) TOTAL COSTS PER ACRE				89.56
- Operator's Labor				
(B) = Total Cost less Operator's Labor				\$ 86.77
- Interest on Land				
(C) = Total Cost less Operator's Labor and Interest on Land				\$ 76.27
(D) EXPECTED GROSS RETURNS PER ACRE				56.00
RETURNS TO OPERATOR'S LAND, LABOR AND MANAGEMENT (D-C)				20.27
RETURNS TO OPERATOR'S LABOR AND MANAGEMENT (D-B)				30.77

Table B

RETURNS PER ACRE TO OPERATOR'S LAND, LABOR AND MANAGEMENT
AT VARIOUS YIELDS AND PRICES

COSTS PER UNIT (e.g. Bu.) AT VARIOUS YIELDS

Crop Grain Silage Area Strathcona/ Leduc		Yield Ton Per Acre						
		-30%	-20%	-10%	Average	+10%	+20%	+30%
Price per Ton		5.6	6.4	7.2	8.0	8.8	9.6	10.4
RETURNS PER ACRE	6.00	-41.51	-37.10	-32.68	-28.27	-23.86	-19.44	-15.03
	6.50	-38.71	-33.90	-29.08	-24.27	-19.46	-14.64	-9.83
	7.00	-35.91	-30.70	-25.48	-20.27	-15.06	-9.84	-4.63
	7.50	-33.11	-27.50	-21.88	-16.27	-10.66	-5.04	.57
	8.00	-30.31	-24.30	-18.28	-12.27	-6.26	-.24	5.77
	8.50	-27.51	-21.10	-14.68	-8.27	-1.86	4.56	10.97
	9.00	-24.71	-17.90	-11.08	-4.27	2.54	9.36	16.17
	9.50	-21.91	-14.70	-7.48	-.27	6.94	14.16	21.37
(c) T. Cost Op. Labor & Land Interest		75.11	75.50	75.88	76.27	76.66	77.04	77.43
COSTS PER TON	Cash Cultural Costs	1.45	1.26	1.12	1.02	.92	.84	.78
	Cash Harvest Costs	.48	.48	.48	.48	.48	.48	.48
	Cash Overhead Costs	.76	.67	.60	.53	.49	.45	.41
	Total Cash Costs	2.69	2.41	2.20	2.03	1.89	1.77	1.67
	Non-Cash Overhead	12.60	11.02	9.80	8.82	8.02	7.35	6.78
	Operator's Labor	.43	.40	.37	.35	.33	.32	.31
Total Costs		17.72	13.83	12.37	11.20	10.24	9.44	8.76



EQUIPMENT	Size	Cost Price	Salvage Value	(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)		(12)		(13)	(14)	(15)	(16)
				All Crops Coverage Acres	Study Crop Coverage Acres	%	Life Yrs.	Annual Costs		Annual Costs/Ac.		Power H.P.	Acres/Hour	Cash Costs/Hour		Fuel \$	Repairs \$	Total** \$							
								Deprec.	Int.*	Deprec.	Int.*			Fuel	Repairs										
Cultivator	14'	\$ 11400	\$.140	500	100	20	20	\$ 12.60	\$ 11.55	.25	.23	90	5.5	--	--	.18	.18								
Drag Harrows	40'	1000	100	250	50	20	25	7.20	8.25	.14	.17	90	27.0	--	--	.20	.20								
Double Disc	14'	2500	250	250	*50	20	12	5.63	20.63	.11	.41	90	7.0	--	--	.50	.50								
Press Drill	12'	2800	280	250	50	20	20	25.20	23.10	.50	.46	40	6.0	--	--	.54	.54								
Sprayer	40'	650	65	250	50	20	12	9.75	5.36	.19	.11	40	16.0	--	--	.40	.40								
Swather SP	12'	5000	500	250	50	20	8	112.50	41.25	2.25	.83	--	4.5	.76	1.07	1.83	1.83								
Harvester	Med.	4000	400	50	50	100	5	144.00	33.00	2.88	.66	90	2.5	--	--	.75	.75								
Dump Box	5T	3800	380	25	25	100	20	171.00	156.75	3.42	3.14	40	1.25	--	--	.43	.43								
Silage Wagon	5T	3800	380	25	25	100	10	342.00	156.75	6.84	3.14	40	1.25	--	--	.60	.60								
Blower		1500	150	50	50	100	8	168.75	61.90	3.38	1.24	90	2.5	--	--	.48	.48								
				HRS/YEAR	HRS/YEAR																				
Tractor D		12000	3600	156	37	24	8	252.00	140.40	5.04	2.80	90	6.4	1.18	.60	1.78	1.78								
Tractor G		6000	1800	78	21	27	8	141.75	78.98	2.84	1.58	40	7.0	1.00	.28	1.28	1.28								
Tractor D		12000	3600	--	--	10	8	105.00	58.50	2.10	1.17	90	---	1.18	.60	1.78	1.78								

FIXED COSTS TO STUDY CROP	Grain Silage (Crop)
---------------------------	------------------------

[illegible]

Cropland Acres	
Silage	50 Acres
Grain	200 Acres
Timothy Hay	50 Acres
Wild Past	20 Acres
	Acres
Total	320 Acres

